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Department of Agronomy

Lawn Fertilization for Established Turf

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Lawns need to be fertilized to maintain their beauty as well as turf density. Turfgrass leaves have a very short life span of 30 to 45 days. As a leaf blade dies off naturally, a new one pushes out from the base of the turf plant to replace it. Proper fertilization enhances this process. This publication describes the proper fertilization for Kentucky bluegrass, perennial ryegrass, turf-type tall fescue, and fine fescue.

The fertilizer applied to lawns should contain nitrogen, phosphorus, and potassium. This is referred to as a "complete fertilizer." Despite advertising claims, there is no such thing as a "balanced fertilizer."

The fertilizer label must state the percentage by weight of nitrogen, phosphorus, and potassium, in that order. For instance, a 24-4-8 fertilizer analysis contains 24% nitrogen, 4% phosphorus as P_2O_5 , and 8% potassium as K_2O . In selecting a turf fertilizer, make sure that the first number (percent nitrogen) in the analysis is much larger than the other two numbers. A nutrient ratio of approximately 4-1-2 would be classified as a good, complete turf fertilizer. The turfgrass growth rate as well as lawn color is determined primarily by the kind of nitrogen and the rate of application. Phosphorus and potassium are involved in many important growth processes in the plant.

During the year a fertilizer containing only nitrogen could be used once or twice to complement the complete fertilization program. A nitrogen only material like urea (46-0-0) would be recommended for the late fall fertilization.

Nitrogen fertilizers come in two release rates: quick release (soluble nitrogen) and slow release (insoluble nitrogen). A quick release nitrogen will release the nitrogen in a short period of time. A slow release nitrogen will release the nitrogen over

a longer period. A big advantage of the slow release component in a lawn fertilizer is that of burn protection. From late spring to early fall, a turf fertilizer that contains some of each kind would be appropriate. Something approaching a 50-80% fast release (soluble) and 20-50% slow release (insoluble) is suggested. Most lawn fertilizers will effectively release nitrogen over a period of six to ten weeks.

Fertilization Programs

As a general rule, it is best to fertilize light in the spring and early summer, little to none in the summer, and heavy in the fall and late fall period. High rates of nitrogen in the spring are not recommended, since this sharply increases the potential for disease and insect activity. In addition, the turf plant will produce excessive topgrowth at the expense of root growth. The limited root system will result in decreased quality of the turf during dry summer conditions.

Purdue turfgrass researchers recommend a lawn fertilization program based on a majority of the nitrogen being applied in the fall and late fall period. Three fertilization programs for cool season lawns in central Indiana appear in Table 1. The dates should be adjusted 10-15 days later for southern Indiana and 10-15 days sooner for northern Indiana in the fall. Choice of program will depend on turf quality desired.

A spring application of 0.75 lb. nitrogen per 1000 square feet is recommended where no previous late fall fertilization was applied. Skip the July fertilization recommended in Table 1 if the spring fertilization is used. In future years this spring application can be eliminated.

Table 2 will help you to determine the amount of fertilizer you need for your lawn, based on the pro-

Table 1. Recommended Fertilization Programs.

Date	Actual nitrogen (N) lb./1000 sq. ft.	Maximum	Nitrogen program Standard	Minimum
May 15-June 1	1.0	x	x	
July 15-30	0.75*	x		
September	1.0	x	x	x
Nov. 1-Nov.15	1.0-1.5	x	x	

*For irrigated lawns only; this application should be skipped if a spring fertilization is made.

gram you selected from Table 1. To use Table 2, take the first number on the fertilizer bag and find the corresponding entry in the left-hand column of the table. For instance, a 24-4-8 fertilizer applied at 1.0 lb. N per 1,000 sq. ft. would require approximately 4.5 lb. of product per 1,000 sq. ft.

Fertilizer Burn

To reduce burn potential of a fertilizer consider the following.

- Use slow release nitrogen products when the weather turns warm. Apply to dry turf and water in immediately.
- Apply the fertilizer uniformly over the lawn. Apply the fertilizer track to track when using a spreader. This is more easily accomplished with a rotary spreader vs. a drop-type spreader. Improper spreading of fertilizer will result in "streaking," the alternate dark and light green stripes in a lawn.
- Fill the fertilizer spreader on a paved area to prevent spillage on the turf.
- Agricultural-type fertilizers (10-10-10, 15-15-15, etc.) should not be applied with a drop-type spreader. A properly calibrated rotary spreader should be used.

- Regular cleaning and lubrication of the spreader will reduce corrosion.

Grass Clipping Removal

To get the best results from your fertilization program, grass clippings should not be removed. Grass clippings do not contribute significantly to thatch buildup. They are mainly water, protein, and various plant nutrients. In fact, clippings left on a well-fertilized lawn will return 1 to 2 lb. of nitrogen per 1000 sq. ft. per year.

Soil Testing

Making lime applications to a soil with a pH above 7.0 could be detrimental to growing good turf.

Testing your soil every three to five years is a good investment. The soil test results will help you select the best fertilization for your lawn. This service is available from the Purdue University Soil Testing Laboratory. Soil test forms and sample bags are available from your county Extension Agent. See AY-18, "How to Interpret your Soil Test Results" for further information.

Table 2. Approximate Amount of Fertilizer Required to Provide 0.75, 1.0, or 1.5 lb. Actual Nitrogen per 1,000 sq. ft.

% nitrogen ^a	Amount of actual nitrogen per 1,000 sq. ft.		
	0.75 lb. N ^b	1.0 lb. N	1.5 lb. N
48-43	1.5	2.2	3.3
42-37	1.9	2.4	3.8
36-31	2.0	3.0	4.5
30-25	3.0	4.0	5.5
24-20	3.5	4.5	7.0
19-15	4.5	6.0	9.0
14-10	6.5	9.0	12.5
9-5	11.0	14.0	21.5

^aFirst number on fertilizer bag.

^bN = nitrogen.

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